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SYNTEX RESEARCH
DIVISION OF SYNTEX (USA) INC.
3401 HILLVIEW AVENUE
PALO ALTO, CALIF. 94304

ANALYTICAL RESEARCH

Site: Syntex-Verona
ID #: MOD 007432/54
Break: 17.8
Other: Spring River
Sampling

10-8-85 0751

LEWIS J. THROOP, Ph.D. DIRECTOR (415) 855-5166

RECEIVED

OCT 08 1985

CMPL SECTION

A/R: 6663
October 1, 1985

Mr. Kenneth S. Ritchey
U.S.E.P.A.
Region VII
324 E. Eleventh St.
Kansas City, MO 64106



40033415
SUPERFUND RECORDS

Dear Mr. Ritchey:

Enclosed for your information is a memorandum describing our review the results of the first of five annual samplings of fish from the Spring River, pursuant to the Spring River Fish and Sediment Sampling Plan (Plan) that was approved by the U.S. EPA on March 24, 1984.

You will note that there was a problem with the preparation and labelling of the fish in "Group B" (reconstituted whole fish), as described in the memorandum. However, this difficulty will not affect our ability to obtain the analytical results essential to the statistical calculations required by the Plan. In short, Group B results, while incorrect, are not required for these calculations; only Group A and C results are necessary for the statistical analysis.

Dr. Gross has received the fish necessary for this year's analyses. The results of this year's sampling will be forwarded to you promptly following our review and approval of the data.

Sincerely,

Dr. Lewis Throop
Director, of Analytical and
Environmental Research

LT:j

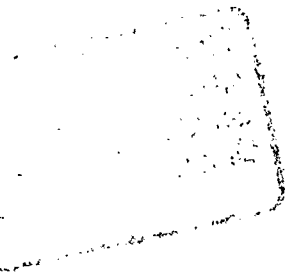
Enclosure

xc: F. Brunner
R. Crunkilton
M. Gross
R. Morby

g/afssr.033

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SYNTEX RESEARCH
ANALYTICAL RESEARCH
PALO ALTO, CA 94304

MEMORANDUM

MEMO TO: L. Throop

A/R: 6481
October 1, 1985

CC:

FROM: D. Robertson DR

SUBJECT: Labeling of Fish Samples From the Spring River

There was some concern about the method of preparation for samples of whole fish taken from the Spring River in 1984. I spoke with Dr. Michael Gross, who directed the analysis, and Mr. Ronald Crunkilton, who obtained the fish and prepared them for analysis. I believe that there are some deficiencies in their labeling and preparation of the fish samples. Some data needed to calculate the TCDD levels in whole fish is not available.

Mr. Crunkilton collected the fish and filleted some as the protocol required. It was his original expectation that the samples would be homogenized by the analytical laboratory. Later it was decided that the blending of the samples would be arranged for by MDNR. At location 1, a special group consisting of whole fish, was properly prepared and labeled Group C. One group of fish at each location was labeled "A" and the fillets were prepared for analysis as required by the protocols. At each location a group of fish, labeled "B", was prepared by removing one fillet. The fillets were combined and homogenized and the remaining parts were combined and homogenized. Some confusion then arose because the remaining parts were labeled as "whole fish" even though they were only the portions of the fish with one fillet removed. When I spoke to Mr. Crunkilton he was referring to his original records and he confirmed that the "whole fish" in Group B at each location were not actually whole fish but, in fact, the remaining parts after one fillet had been removed. The confusion over labeling can be overcome, but he could not provide the original weights of the two portions. So,

we cannot calculate a weighted average for the whole fish analysis. We may be able to use the typical yield for fillets in these species or actual weights from the samples taken this year to estimate the values for the 1984 samples. Obviously, there are limitations in this approach.

At the Midwest Center for Mass Spectrometry, the abbreviations for "Group" were misread and typed as "9p" in the final report. One sample number appears to be confused. The whole fish [sic] sample in Group B from location 3 is labeled as BAC 414, but reported as BAC # 405. However, the descriptive part of the label appears to be correct and the TCDD level reported appears to be typical of the remainder of the fish, rather than the fillet. These problems seem to be minor and to a large extent can be rectified.

I am confident that the confusion has not affected the analyses reported for fillets of fish from the Spring River. However, with the exception of Group C from Location 1, the analysis reported for whole fish in fact represent remnants from partially filleted fish. Since the level of TCDD is higher in the remnant than in either the fillet or whole fish, these values are not accurate measures of fish contamination. Consequently, these values for remnants cannot be used to evaluate trends with time or distance, or to attempt to assess risks of exposure to TCDD.

The tables from Dr. Gross' report of January 8, 1985 have been revised to reflect the information discussed here. For Table 1 the only changes needed were to spell out the word "Group". In Table 2 all of the entries for Group B were deleted since these values were derived from samples of remnants rather than whole fish. The single entry for whole fish from Location 1 is the only one remaining for use in statistical evaluations.

dr/lfssr(L).028

Table 1. Analysis of Fish Fillet for 2,3,7,8-TCDD by Capillary Column GC/HRMS

| Sample ID | Weight | Concentration of 2,3,7,8-TCDD (ppt) | Detection Limit (ppt) | Percent Recovery | 320/322 Isotope Ratio |
|-------------------|--------|---|--------------------------|------------------|--------------------------|
| <u>Location 1</u> | | | | | |
| Group A, BAC #409 | 31.89 | 4 | 2 | 80 | .69 |
| Group B, BAC #402 | 33.94 | 4 | 2 | 100 | .76 |
| <u>Location 2</u> | | | | | |
| Group A, BAC #403 | 31.50 | 3 | 0.9 | 90 | .80 |
| Group B, BAC #403 | 34.86 | 4 | 0.8 | 75 | .71 |
| <u>Location 3</u> | | | | | |
| Group A, BAC #405 | 33.61 | 3 | 1.5 | 75 | .671 |
| Group B, BAC #405 | 36.33 | 3 | 0.9 | 70 | .71 |
| <u>Location 4</u> | | | | | |
| Group A, BAC #406 | 30.57 | 2 | 1.0 | 100+ | .79 |
| Group B, BAC #406 | 50.41 | 2 | 0.6 | 85 | .671 |
| <u>Location 5</u> | | | | | |
| Group A, BAC #408 | 35.17 | ND | 2.0 | 100+ | |
| Group B, BAC #408 | 37.25 | ND | 1.5 | 70 | |

1 See explanation on pages 9 and 10 under comments.

(Table revised by David Robertson, 8/20/85)

Table 2. Analysis of Whole Fish for 2,3,7,8-TCDD by Capillary Column GC/HRMS

| Sample ID | Weight | Concentration of 2,3,7,8-TCDD (ppt) | Detection Limit (ppt) | Percent Recovery | 320/322 Isotope Ratio |
|-------------------|--------|--|--------------------------|------------------|--------------------------|
| Location 1 | | | | | |
| Group C, BAC #402 | 31.47 | 30 | 2 | 60 | .911 |

* = repeat analysis

1 See explanation on pages 9 and 10 under comments.

(Table revised by David Robertson, 8/20/85)

dr/lfssr-2(L).028

TABLE 3.

COMPARISON OF LABELS FOR FISH SAMPLES FROM THE SPRING RIVER, 1984As Described by
R. Crunkilton, 8/2/85As LabeledAs Reported by the Midwest
Center for Mass Spectroscopy

| | | |
|-----------------------------|--------------------------------------|-----------------------------------|
| Fillet, Group A, Loc. 1 | Fillet, Group A, Loc. 1, BAC 409 | Fillet, 9pA, Loc. 1, BAC #409 |
| Fillet, Group B, Loc. 1 | Fillet, Group B, Loc. 1, BAC 402 | Fillet, 9pB, Loc. 1, BAC #402 |
| Remainder, Group B, Loc. 1 | Whole Fish, Group B, Loc. 1, BAC 402 | Whole Fish, 9pB, Loc. 1, BAC #402 |
| Whole Fish, Group C, Loc. 1 | Whole Fish, Group C, Loc. 1, BAC 402 | Whole Fish, 9pc, Loc. 1, BAC #402 |
| Fillet, Group A, Loc. 2 | Fillet, Group A, Loc. 2, BAC 403 | Fillet, 9pA, Loc. 2, BAC #403 |
| Fillet, Group B, Loc. 2 | Fillet, Group B, Loc. 2, BAC 403 | Fillet, 9pB, Loc. 2, BAC #403 |
| Remainder, Group B, Loc. 2 | Whole Fish, Group B, Loc. 2, BAC 403 | Whole Fish, 9pB, Loc. 2, BAC #403 |
| Fillet, Group A, Loc. 3 | Fillet, Group A, Loc. 3, BAC 405 | Fillet, 9pA, Loc. 3, BAC #405 |
| Fillet, Group B, Loc. 3 | Fillet, Group B, Loc. 3, BAC 405 | Fillet, 9pB, Loc. 3, BAC #405 |
| Remainder, Group B, Loc. 3 | Whole Fish, Group B, Loc. 3, BAC 414 | Whole Fish, 9pB, Loc. 3, BAC #405 |
| Fillet, Group A, Loc. 4 | Fillet, Group A, Loc. 4, BAC 406 | Fillet, 9pA, Loc. 4, BAC #406 |
| Fillet, Group B, Loc. 4 | Fillet, Group B, Loc. 4, BAC 406 | Fillet, 9pB, Loc. 4, BAC #406 |
| Remainder, Group B, Loc. 4 | Whole Fish, Group B, Loc. 4, BAC 417 | Whole Fish, 9pB, Loc. 4, BAC #417 |
| Fillet, Group A, Loc. 5 | Fillet, Group A, Loc. 5, BAC 408 | Fillet, 9pA, Loc. 5, BAC #408 |
| Fillet, Group B, Loc. 5 | Fillet, Group B, Loc. 5, BAC 408 | Fillet, 9pB, Loc. 5, BAC #408 |
| Remainder, Group B, Loc. 5 | Whole Fish, Group B, Loc. 5, BAC 418 | Whole Fish, 9pB, Loc. 5, BAC #418 |